

Application No. 10/532,827
Attorney Docket No.: 052478
Response Under 37 C.F.R. § 1.116

REMARKS

Claims 1-8 are pending in the present application.

Claim Rejections - 35 U.S.C. § 103

Claims 1-8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over **Hase** (WO 01/32418 with U.S. Patent 7,101,455 used as a translation) in view of **Iizuka** (JP 2002-172639, machine translation) and/or **Okochi** (JP 04080348, abstract).

Favorable reconsideration is requested.

A. No Motivation to Combine Hase and Iizuka

Applicants respectfully submit that one of ordinary skill in the art would not have been motivated to combine Hase and Iizuka.

Hase discloses that cooling may be performed by contacting the laminate with a substrate of lower temperature. As acknowledged by the Office Action, Hase does not disclose controlling the temperature in a width direction of the laminate in a cooling process after the lamination. Hase does not disclose a cooling substrate having a temperature gradient. Accordingly, Hase does not disclose that the laminate is cooled down non-uniformly.

By contrast, the cooling process disclosed in Iizuka differs from Hase in being performed in the lamination process, not after lamination. For this reason, cooling is performed by flowing water into a coolant passage on a press hot platen. Due to this cooling process, the cooling substrate inevitably has the temperature gradient, while the gradient varies according to the flow direction. Therefore, starting from the non-uniform cooling process, Iizuka analyzes the

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temperature gradient with flow direction and specifies the suitable temperature gradient in the cooling process.

The Office Action takes the position that Iizuka is analogous and combinable with Hase because Iizuka is directed to a heat lamination process for metallic foils. (Office Action, pages 8 and 9.) However, one of ordinary skill in the art would not have been motivated to combine Hase which does not disclose a non-uniform cooling process with Iizuka which discloses starting from a non-uniform cooling process performed in the lamination process.

B. Present Invention and Iizuka are in Non-Analogous Arts

Applicants respectfully submit that the present invention and Iizuka are not in analogous arts.

Iizuka discloses a batch-wise laminating method which is a non-analogous process from the continuous lamination as recited in the claims. Additionally, the curl or dimensional change of the laminate in Iizuka is different from the “end waviness” in the present invention. The continuous lamination process is performed in a roll to roll process as shown in the drawing, and the “end waviness” results from the plastic deformation caused by take-up tension which can not exist in Iizuka. In Iizuka, the curl or dimensional change of the laminate is caused by residual strain in the laminate.

C. Okochi does not disclose controlling the temperature of the ends of the Lamine to have a temperature that is the same as or higher than that of the center portion

Applicants respectfully submit that Hase in view Iizuka and/or Okochi does not teach or suggest:

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controlling the temperature in a width direction of the laminate in a cooling process after the lamination so that the temperature of the ends of the laminate is the same as or higher than that of the center portion

as recited in claim 1.

The Office Action acknowledges that Hase does not disclose controlling the temperature in a width direction of the laminate in a cooling process after the lamination. (Office Action, page 3.) The Office Action cites Okochi for disclosing controlling the temperature in a width direction of the laminate in a cooling process after the lamination.

The Office Action cites an English translation abstract of Okochi for disclosing “cooling a metal sheet by controlling the temperature in a width direction of the sheet such that the temperature at the center of the sheet is lower than the temperature at the sides of the sheet by 30 to 60°C to prevent the sheet from wrinkling.” (Office Action, pages 8-9.) The English translation abstract of Okochi provided by the Office Action states:

Galvannealed steel plate is cooled to 400-250 deg.C with the temp. at the centre lower than the temp. of the sides by 30-60 deg.C and conveyed through a deflector roll. The centre is within 50 mm from both ends.

Applicants respectfully submit that the English translation abstract of Okochi provided with the Office Action is inaccurate. Okochi discloses that the temperature at the center of the steel sheet is at most 60°C lower than both ends, (Okochi, claim 1), and at most 30°C higher than both ends, (Okochi, claim 2). (See enclosed translation of Okochi.) Thus, in Okochi, the temperature at the ends is controlled to -30°C to about +60°C relative to the center. Therefore, Okochi does not disclose controlling the temperature in a width direction of the laminate in a

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cooling process after the lamination so that the temperature of the ends of the laminate is the same as or higher than that of the center portion.

D. Present Invention and Okochi are in Non-Analogous Arts

Applicants respectfully submit that the present invention and Okochi are not in analogous arts.

Okochi discloses a molten alloyed zinc plating method which is non-analogous to the thermal laminating method of the present invention.

Double Patenting Rejection

Claims 1, 2 and 5-8 were rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4 of **Hase** (U.S. 7,101,455) in view of **Iizuka** and **Okochi**; and claims 3 and 4 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4 of **Hase** (U.S. 7,101,455), **Iizuka** and **Okochi**, and further in view of **Tokabayashi** (JP 04033848). Favorable reconsideration is requested.

The Office Action acknowledges that claims 1-4 of **Hase** (U.S. 7,101,455) do not encompass the teaching that the temperature of the ends of the laminate is the same as or higher than that of the center portion in the cooling process. The Office Action states that this feature is obvious in view of **Iizuki** and **Okochi**.

Applicants respectfully submit that this feature is not obvious in view of **Iizuki** and **Okochi** for the same reasons stated above regarding the § 103 rejection based on **Hase** in view of **Iizuki** and **Okochi**.

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Conclusion

For at least the foregoing reasons, claim 1 is patentable over the cited references, and claims 2-8 are patentable by virtue of their dependence from claim 1. Accordingly, withdrawal of the rejection of claims 1-8 is hereby solicited.

In view of the above remarks, Applicants submit that the claims are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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AGM/adp
Enclosure: Translation of Okochi

Translation of Okochi

Claim 1 A method of producing a molten alloyed galvanized steel sheet characterized in that a heat alloy treatment after a hot-dip galvanization is performed, then the temperature of the center portion is cooled to 250 to 400 deg. C while cooling the center at most 60 deg. C lower than the temperature of the both ends in the width direction, and then sheet is fed through a deflector roll.

Claim 2 A method of producing a molten alloyed galvanized steel sheet according to claim 1, wherein the center portion is cooled at most 30 deg. C higher than the both ends of sheet.